

Gustav Nilsson

Ph.D. Student

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Date of birth: June 9th, 1989
Nationality: Swedish

Education

Ph.D. in Automatic Control, Lund University, Sept 2013 – Feb 2019.

Supervisor: Giacomo Como.

M.Sc. in Engineering Physics, Lund University, Sept 2008 – Aug 2013.

Specialized in Mathematics and Automatic Control.

GPA: 4.8/5.

Research Interests

Modeling and control of flows in networks; traffic control.

Internships

October 2017 - March 2018: Mitsubishi Electric Research Laboratories, Cambridge, MA. Host: Uros Kalabic

Publications

Peer-Reviewed Conference Publications

1. G. Nilsson, P. Grover, and U. Kalabic. "Assignment and Control of Two-Tiered Vehicle Traffic". Accepted for publication at IEEE CDC 2018.
2. C. Rosdahl, G. Nilsson, and G. Como. "On distributed optimal control of traffic flows in transportation networks" (INVITED). Accepted for publication at CCTA 2018, Copenhagen, Denmark.
3. G. Nilsson and G. Como, "Evaluation of Decentralized Feedback Traffic Light Control with Dynamic Cycle Length". 15th IFAC Symposium on Control in Transportation Systems, 2018, Savona, Italy.
4. G. Nilsson and G. Como, "On Generalized Proportional Allocation Policies for Traffic Signal Control". (INVITED) 20th IFAC World Congress, 2017, Toulouse, France.
5. G. Nilsson, P. Hosseini, G. Como, and K. Savla, "Entropy-like Lyapunov Functions for the Stability Analysis of Adaptive Traffic Signal Controls," (INVITED) in Proc. of IEEE Control Decision Conference, (Osaka, Japan), December 15-18, 2015.
6. G. Nilsson, G. Como, and E. Lovisari, "On Resilience of Multicommodity Dynamical Flow Networks", in Proc. of 2014 Control Decision Conference, (Los Angeles, CA, USA), December 15-17, 2014.

In Preparation/Under Review

7. G. Nilsson, M. Chong, and G. Como, "Proportional Scheduling with Dynamic Cycle Lengths "

Thesis

1. Master's thesis: "A multi-commodity dynamical model for traffic networks", 2013.

Supervisors: Giacomo Como and Enrico Lovisari.

Research Visits

October – November 2018: Dipartimento di Scienze Matematiche "Giuseppe Luigi Lagrange", Politecnico di Torino

July 2018: Dipartimento di Scienze Matematiche "Giuseppe Luigi Lagrange", Politecnico di Torino

October and December 2016: Dipartimento di Scienze Matematiche "Giuseppe Luigi Lagrange", Politecnico di Torino

September – October 2015: Institute for Pure & Applied Mathematics, UCLA

May 2014: Grenoble Traffic Lab, INRIA Grenoble – Rhone-Alpes.

Reviews

Reviewer for IEEE Transactions on Control of Network Systems, IEEE Transactions on Intelligent Transportation Systems, Automatica, IEEE Control Systems Letters (L-CSS), IEEE Conference on Decision and Control (2015, 2016, 2017, 2018), American Control Conference (2017), IFAC World Congress (2017), IFAC Symposium on Control in Transportation Systems (2018).

Invited Seminars

DISMA Politecnico di Torino (Turin, Italy), July 4, 2018.

Teaching Experience

During my Ph.D. studies:

Network Dynamics – Teaching assistant three times and involved in the development of the course.

Physiological Models and Computations – Teaching assistant and involved in the development of the course.

Automatic Control, Basic Course – Teaching assistant four times.

Automatic Control, Basic Course in China – Lecturer for one third of the course and teaching assistant.

During my M.Sc. studies:

Calculus in One Variable – Teaching assistant one time.

Calculus in Several Variables – Teaching assistant two times.

Linear Algebra – Teaching assistant three times.

Supervision

Master's Thesis

1. Christian Rosdahl, "Distributed Control of Dynamic Flows in Traffic Networks", 2017, co-supervisor.
2. Joakim Guth, "On Distributed Maximization of Influence in Social Networks", 2017, co-supervisor.

3. Rasmus Stålberg, "On Robustness of Equilibria in Transportation Networks", 2018, co-supervisor.
4. Simon Paulsson, "Tuning Feedback-Based Traffic Signal Controls", 2018, co-supervisor.

Pedagogical Training

Over five weeks of pedagogical courses including:

- Introduction to teaching and learning in higher education.
- Communicating science.

Miscellaneous

Languages: **Swedish** native; **English** fluent; **German** basic.

Programming Languages: MATLAB, C, Python, Java, PHP, SQL, L^AT_EX.